

ranged from 30.01 inches on the 23d to 30.19 on the 26th. Position at 8 a. m. on the 23d, 37° 43' N., 72° 11' W. At 8 a. m. on the 29th, 14° 54' N., 62° 26' W.

On the 29th there was a disturbance central near Hatteras that moved northeastward along the coast and on the 31st covered the region between Newfoundland and Nova Scotia; vessels in the southerly quadrants reported moderate to strong gales. Storm logs:

Italian S. S. *Clara*, Portugal to Philadelphia:

Gale began on the 29th, wind S. Lowest barometer 29.51 inches at 5 p. m. on the 29th, wind N., 9, in 37° 10' N., 70° 15' W. End on the 29th, wind NNE. Highest force of wind 9, N.; shifts S.-Calm-N.-NNE.

French S. S. *Rochambeau*, Havre to New York:

Gale began on the 30th, wind NE. Lowest barometer 29.63 inches from 6 to 12 a. m. on the 30th, wind NE., in 40° 59' N., 66° 02' W. End at 2 p. m. on the 30th. Highest force of wind 8; shifts NE.-N.

British S. S. *Aquitania*, Southampton to New York:

Gale began on the 31st, wind SSW. Lowest barometer 29.46 inches at 2.30 a. m. on the 31st, wind SSW., 10, in 41° 03' N., 58° 40' W. End at 6 a. m. on the 31st, wind W. Highest force of wind 10, SSW.; shifts SSW.-WSW.

## 551.506 (265.2) ——— NORTH PACIFIC OCEAN

By WILLIS EDWIN HURD

July, like the preceding month, was a period of few storms on the North Pacific. Along the entire northern sailing routes gales were rare and for the most part inconsequential. No gales were reported from mid-ocean, and the only severe disturbance of the month was a typhoon in the Far East. Only calms and light variable winds—northwesterly along the Mexican coast—seem to have occurred in lower southeastern tropical waters. At Honolulu the prevailing wind was from the east. The maximum wind velocity was at the rate of 29 miles an hour from the east, but on 8 other days the highest velocity equalled or exceeded 25 miles.

Mr. Joseph A. Stevens, observer on board the American S. S. *Java Arrow*, Shanghai to San Francisco, June 28 to July 15, thus commented upon the weather observed:

An unusually peaceful trip, wind not exceeding force 4, and sea not higher than moderate. During the greater part only a gentle westerly swell was experienced. The sky for the most part of the passage was overcast.

Mr. R. L. Frizzell, second officer of the American S. S. *Crosskeys*, eastward bound, noted the following:

The vessel remained nearly continuously in fog from July 1, in 44° 03' N., 168° 30' E., until July 7, in 49° 40' N., 146° 10' W. The fog was at times very heavy and at other times in drifting banks, accompanied by heavy mist.

Fog was frequent along the upper steamship lines, but occurred on the greatest number of days west and southwest of 176° E. over an area extending nearly to the Japanese coast. Fog was observed in Chinese waters on several days, and frequently in American coast waters between 50° and 30° N., diminishing southward to Cape San Lucas.

The eastern North Pacific high pressure area covered a great part of the central latitudes throughout July, and though it fluctuated in position of crest and in intensity, was little disturbed internally by cyclonic influences. Occasional gales, however, blew on its northern and eastern borders, due in the one case to the sporadic presence of the Aleutian cyclone, and in the other to the proximity of the fairly well settled continental depression over the western region of the United States.

The Aleutian LOW, as such, was as a whole rather feebly defined. It was central on a few days near or to the westward of Dutch Harbor; on a few days over southern Alaska or the northern part of the adjoining gulf; and in considerably higher latitudes during the major part of the month.

Reports from Dutch Harbor were interrupted during the early part of July and it is impossible to give the average pressure for the month. The average for 20 days was 29.94 inches, whereas the July normal is 30.02, the highest monthly normal of the year. The highest pressure reported was 30.34, on the 24th and 26th; the lowest, 28.94, on the 18th. At Midway Island pressure was higher than in any previous July of record, being 30.19, or 0.12 inch above the average of 13 years, including the current one. Also, it was above the average on every day at the hour of observation. The highest reading was 30.28, on the 1st, 2d, 17th, and 18th; the lowest, 30.10, on the 26th and 27th. Pressure at Honolulu was also above normal, being deficient on only two days and equal to the normal on one. The average p. m. pressure of the month was 30.06, or 0.05 inch above normal. The highest pressure was 30.15, occurring on the 16th; the lowest, 29.94, on the 25th.

Low pressure covered the China coast and adjacent waters. This condition was similar to that of June, but cyclonic activity was greater in July, and at least one fully developed typhoon raged over the Eastern Sea.

This typhoon seems to have originated northwest of Guam about the 5th. The initial depression moved west, then turned into northwest, gaining energy until the 11th, when it was reported in a typhoon warning received by the Norwegian S. S. *Storviken* as "at noon in 24° N., 126° E., depth 28.19, direction NW." The *Storviken* at and near that time was close to 32° N., 131° E., experiencing the following weather:

Partly cloudy, strong easterly wind forenoon, after southeasterly, force 5, sea rough, south swell.

On the 11th the American steamer *West Iskip*, Hong-kong to San Francisco, ran into the storm. At 2 a. m. (local time), while near 28° N., 125¼° E., "the wind shifted to NE. 5-6, barometer 29.50, rough ENE. sea." Sometime during the day the wind went into north with full hurricane force and pressure rapidly falling to the observed minimum of 28.40. At 8:23 p. m., in 28° 25' N., 125° 40' E., the wind was WSW. 9, and at midnight SW. 10, pressure 28.90, rough cross sea. At 2 a. m. of the 12th the southwest gale increased to force 11, then gradually diminished, with rising barometer.

The American S. S. *India Arrow*, Swatow to San Francisco, rode out the worst of the typhoon during the night of the 13th-14th. At 8:20 p. m. of the 13th, in 26° 15' N., 124° 40' E., she experienced a moderate NNE. gale, pressure 29.67. At 2:45 a. m. of the 14th the wind changed to east and rose to a hurricane, pressure 29.31, in 26° 40' N., 124° 45' E. By 8 a. m. the worst of the storm was over, the wind coming into ESE. and the force diminishing to 8.

On the 26th and 27th a depression lay west of Guam, and on the 30th and 31st extended over the northern Philippines and Taiwan. It concentrated in area and probably in energy on August 1, moved northward east of Taiwan, and for several days was a weather factor in Far Eastern waters, though at this writing little is known of its strength.

Coming into that part of the ocean east of the 180th meridian, the westernmost gales encountered were south-east squalls at and near Dutch Harbor on the 20th during

the period of greatest intensity of the Aleutian low. Moderate to fresh gales occurred in the Gulf of Alaska on several days—at the head of the gulf on the 8th, 10th, 11th, 17th, and 18th, as observed by the American S. S. *Northwestern*; and over the south-central and eastern portions on the 1st, 8th, and 22d. The Aleutian off-shooting low which caused the gales on the 8th passed into the Canadian Northwest on the 9th.

Northwest gales occurred near the coast of California on the 5th and 6th, and rising as they did to a force of 10, as noted by the American S. S. *H. F. Alexander*, constituted the strongest winds of the month outside of the Tropics. Moderate northeast gales also occurred near the same coast on the 21st, and farther at sea on the San Francisco-Hawaii route on the 20th and 22d.

### INDIAN AND SOUTH PACIFIC OCEANS

By ALBERT J. McCURDY, JR.

*Arabian Sea*.—Weather reports received from vessels that crossed the Arabian Sea during July indicate a moderate activity of the southwest monsoon in that month. The average wind force was 5, and moderate to fresh gales were experienced on somewhat more than one-fourth of the days.

The Dutch S. S. *Menado*, Capt. R. Borst, Suez to Colombo via Djibouti, encountered on the 6th a moderate southwesterly gale accompanied by high seas. Mr. W. J. Klijn, observer, reports that the lowest pressure observed was 29.66 inches (uncorrected), occurring at 3:40 p. m., in 12° 37' N., 55° E. The wind at this time was SW. by S., force 7, and decreased by 10 p. m. to a fresh SW. breeze.

On the same date the British S. S. *Suncliff*, Capt. H. J. Case, Colombo to Port Sudan, encountered a southwesterly gale in 5° 51' N., 52° 28' E. Mr. A. Horey, third officer, states that the lowest barometer, 29.83 inches, was recorded about 3 p. m. on the 6th. The wind at this time was SW., force 7, thence increased to a fresh gale on the following day, accompanied by high confused seas that lasted until 1 a. m. of the 8th.

From the 15th to 18th the British S. S. *Slavic Prince*, Capt. C. W. Chambers, Penang to Aden, experienced southwesterly winds of force 7 to 8, accompanied by very heavy seas. Mr. W. C. Freeman, second officer, states that the lowest barometer recorded was 29.64 inches (uncorrected), occurring at 3:45 p. m., on the 18th, in 12° 54' N., 57° 15' E.

On the 23d the Dutch S. S. *Kawi*, Capt. E. P. Ross, Sabang to Perim, experienced a southwesterly gale south of Sokotra, reporting conditions similar to those experienced by the *Slavic Prince*. The lowest pressure was 29.73 inches (uncorrected), occurring at 4 p. m., on the 23d in 10° 30' N., 51° 22' E. At this time the wind was SW., force 7, gradually shifting toward the south.

*South Pacific Ocean*.—The only gale of any consequence reported in the South Pacific for this month was a disturbance in the vicinity of New Zealand that appeared on July 21, and which until the 26th occasioned moderate to strong gales with accompanying high seas. The British S. S. *Orowaiti*, Capt. W. H. Smith, Wellington to San Luis Obispo, came within its influence on the 21st. The observer, Mr. C. R. Smith, is quoted as follows:

Gale commenced in early morning of the 21st and increased till midnight. Wind shifted from S. to SW., after rounding Cape Palliser. Wind just blew itself out.

23d–25th. The worst and heaviest wind and sea were experienced between 4 and 8 a. m., on the 25th, which was sometime after lowest barometer. There were no sudden changes of wind.

The lowest barometer recorded was 29.52 inches, occurring at 4 p. m. on the 24th, in 29° S., 172° 51' W. The wind at this time was northerly, force 9. The gale lasted throughout the evening of the 25th, and during that time the wind shifted to the SW.

From the 24 to 26th this same gale was experienced by the British S. S. *Maunganui*, Capt. L. C. H. Worsall, Wellington to Rarotonga. Mr. W. Johnson, observer, reports that the lowest barometer noted was 29.47 inches (uncorrected), occurring at 2 p. m. on the 24th, in 31° 31' S., 171° 40' W. The wind at this time was SE., force 8, later shifting to NW., thence to W. by S., force 8, with a steadily rising barometer.

551.506 (73)

### DETAILS OF THE WEATHER IN THE UNITED STATES

#### GENERAL CONDITIONS

By ALFRED J. HENRY

Anticyclones (HIGHS) that drifted slowly across the continent toward the southeast appeared to dominate the weather of the month in the great majority of districts. As a whole, the month was cool and dry, although areas in Florida, the lower Mississippi Valley, and the northern Rocky Mountain Plateau had above-normal temperature. The rainfall was irregularly distributed; more than the normal fell along the Atlantic coast south of the Virginia capes, also locally in the Lake region and the middle Mississippi Valley. In general, however, the rainfall in the great majority of localities was below the normal, the shortage being especially noticeable in the lower Mississippi Valley and the western Gulf States. The usual details follow:

#### CYCLONES AND ANTICYCLONES

By W. P. DAY

The general movement of the centers of cyclones during the month of July was eastward across the northern United States, and Canada (within the limits of observation).

However, the low-pressure systems crossing the field of observations were mostly of the trough formation and sometimes without the usual accompanying cyclonic circulation. The weather over the Southern States was entirely dependent on the day-to-day displacements of these troughs or lines of discontinuity.

The anticyclones, on the other hand, were generally more prominent and retained their identities over considerable periods, notably the Alberta HIGHS which were on the weather chart at the beginning and at the end of the month.

#### FREE-AIR SUMMARY

By V. E. JAKL, Meteorologist

The average free-air conditions for the month, as determined by kites and given in Tables 1 and 2, showed, with no important exceptions, close agreement with the normal for all sections of the country represented by the six fully equipped aerological stations. The most noticeable departure is in temperature, in which respect the month was generally slightly cooler than normal, although the departures were not of a decided nature ex-